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Directive 073

December 17, 2008

Requirements for Inspection and Compliance of Oil Sands Mining and Processing Plant Operations in the Oil Sands Mining Area

The Energy Resources Conservation Board (ERCB/Board) has approved this directive on December 17, 2008.

Dan McFadyen
Chairman

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1 Overview

1.1 Purpose of the Directive

Directive 073: Requirements for Inspection and Compliance of Oil Sands Mining and Processing Plant Operations in the Oil Sands Mining Area is designed to ensure that oil sands mining and processing plant operations, in the surface mineable area of Alberta, are inspected by Energy Resources Conservation Board (ERCB) inspection staff in a consistent manner. "Facility" in this directive means all infrastructure associated with oil sands mining and processing plant operations. "Processing plant" in this directive means a facility for obtaining crude bitumen from oil sands that have been recovered or for obtaining oil sands products from oil sands, crude bitumen, or derivatives of crude bitumen that have been recovered.

This directive and its inspection check sheet are also intended to inform industry personnel about what is required to achieve a satisfactory ERCB inspection result.

This directive details the ERCB minimum requirements that operators of oil sands mining and processing plant operations must follow. In addition, the directive provides a reference for ERCB inspection staff to assist in completing the Oil Sands Mining and Processing Plant Operation Inspection Check Sheet and is a guide to industry for what operators can expect during and following an inspection. Appendix 1 provides the levels of noncompliance for operational deficiencies.

The requirements of this directive are based on the following:

- *Oil Sands Conservation Act* (*OSCA*),
- *Oil Sands Conservation Regulation* (*OSCR*),
- *Informational Letter* (*IL*) *96-07: EUB/AEP Memorandum of Understanding on the Regulation of Oil Sands Development*,
- *IL 94-19: Dam Safety Accord*,
- *Agreement Between Alberta Employment, Immigration and Industry and the Alberta Energy and Utilities Board Respecting the Coordination of Services for Coal and Oil Sands Mine Projects* (*EII/EUB MOU*),
- requirements set out in approval conditions for each oil sands mining and processing plant scheme,
- operator's ERCB-approved S-23 production accounting manual,
- *Interim Directive* (*ID*) *2001-07: Operating Criteria: Resource Recovery Requirements for Oil Sands Mine and Processing Plants*,

- *ID 2001-03: Sulphur Recovery Guidelines for the Province of Alberta*,
- *Directive 019: ERCB Compliance Assurance—Enforcement*,
- *Directive 038: Noise Control*, and
- *ERCB Internal Guide 8: Corporate Occupational Health and Safety Program Manual*.

In this directive reference is made to existing directives and regulations that apply to upstream oil and gas industry facilities. Upon implementation of this directive, those requirements are now incorporated in this directive and it becomes the enforceable directive for oil sands mining and processing plant operations within the surface mineable area. The requirements of this directive are also based on specified sections of the following, as referred to in Appendix 2:

- *Oil and Gas Conservation Act* (*OGCA*),
- *Oil and Gas Conservation Regulations* (*OGCR*),
- *Directive 055: Storage Requirements for the Upstream Petroleum Industry*, and
- *IL 98-01: A Memorandum of Understanding between Alberta Environmental Protection and the Alberta Energy and Utilities Board Regarding Coordination of Release Notification Requirements and Subsequent Regulatory Response*.

1.2 What This Directive Contains

This directive describes the role of the ERCB inspector and includes the Oil Sands Mining and Processing Plant Operation Check Sheet, which field inspectors complete for each mine site and processing plant inspected, accompanied by a step-by-step description of how to complete each part of the form.

Nine appendices supplement information in the directive.

The purpose of an inspection is to ensure that operators achieve compliance with ERCB regulations and have safe and efficient practices at all oil sands mining and processing plant operations in the oil sands mining area.

1.3 The ERCB Inspector's Conduct

ERCB inspectors represent the ERCB and must display a positive attitude and fairness to all operators.

Inspectors will comply whenever possible with company policies that require the company be notified prior to inspection or lease entry or if the inspection involves the use of specific safety equipment or procedures (Appendix 3).

Inspectors must have a company representative present whenever possible prior to an inspection, even though the ERCB inspector has the jurisdiction to enter into the facility (Appendix 3).

Where practical, the inspector should have a debriefing discussion with the company's senior personnel on site after an inspection. This

opportunity should be used to establish contacts, exchange information, discuss deficiencies, enforcement, and follow-up, and enhance relations. Inspectors should have a copy of this directive on site when conducting an inspection, as well as copies of pertinent ERCB documents for reference, such as the *S-23 Production Accounting Manual*, *Directive 019*, and other applicable directives.

1.4 Safety

Inspectors must refer to ERCB *Internal Guide 8* prior to inspection of any facility and be sure to follow the requirements.

The inspector will point out any unsafe operating conditions and practices to the operator. As required by *IL 96-07*, *IL 94-19*, the *EII/EUB MOU*, and /or any other formal or implied agreement, the inspector must also advise Alberta Human Resources and Employment (HRE), Workplace Health and Safety (formerly OH&S), Alberta Environment (AENV), Alberta Sustainable Resource Development (SRD), and/or Alberta Municipal Affairs (AMA) of relevant information.

1.5 Jurisdictional Overview

In Alberta, there is no single jurisdiction that regulates all aspects of mining and processing plant facilities. Provincial jurisdictions that are involved in the various aspects of oil sands mining and processing plant operations include, but are not limited to, the ERCB, AENV, SRD, HRE, and AMA.

The ERCB's legislative mandate for oil sands is defined by the *Energy Resources Conservation Act* and more specifically the *OSCA*. With respect to oil sands resources, the ERCB has the primary responsibility to

- effect conservation and prevent waste of the oil sands resources of Alberta,
- ensure orderly, efficient, and economical development in the public interest of the oil sands resources of Alberta,
- provide for the appraisal of Alberta's oil sands resources,
- provide for appraisals of oil sands, crude bitumen, derivatives of crude bitumen, and oil sands product requirements in Alberta and in markets outside Alberta,
- assist the provincial government in controlling pollution in the development and production of the oil sands resources of Alberta,
- provide for the recording and the timely and useful dissemination of information regarding the oil sands resources of Alberta, and
- ensure the observance, in the public interest, of safe and efficient practices in the exploration for and the recovery, storing, processing, and transporting of oil sands, discard, crude bitumen, derivatives of crude bitumen, and oil sands products.

Formal memorandums of understanding (MOUs) have been developed to clarify the roles and responsibilities of the respective regulatory bodies. For the purpose of this directive, these include, but are not limited to, *IL 96-07* and *IL 94-19*. As described in these MOUs, the

ERCB will refer potential noncompliance issues to the appropriate legislative body when the issue is outside the ERCB's jurisdiction. Further, the ERCB may consult with other regulatory bodies and/or conduct joint inspections as appropriate.

1.6 Industry Conduct

Industry must meet the requirements of Section 8 of the *OSCA* in regard to accessing the facility for inspections and investigations. Section 8(1) states:

> At any reasonable time, a member of the Board, or a person authorized by the Board, when acting in the performance of any duties or when exercising any powers under this Act,
>
> (a) must have access to an oil sands site, and to any facilities used in connection with operations at an oil sands site,
>
> (b) may make inspections, investigations or tests and take samples at an oil sands site, and
>
> (c) may examine all books, records and documents pertaining to operations at an oil sands site.

Inspectors must be granted access to oil sands mining and processing plant operations. The need for vehicle and visitor security identification passes must be waived if the following protocols are adhered to:

1) The inspector carries and produces on demand appropriate ERCB personal identification,
2) ERCB vehicles accessing the site are appropriately and clearly marked with ERCB insignia and adhere to all site safety and visibility protocols, and
3) the inspector attends a site orientation as needed.

1.7 Industry Compliance

The ERCB believes that compliance in meeting or exceeding regulations and standards is the responsibility of the energy industry. The ERCB expects all industry participants to understand ERCB requirements and have the infrastructure in place to ensure compliance. However, the ERCB also recognizes that on occasion enforcement of regulations will be required to ensure compliance.

The ERCB conducts surveillance to monitor for compliance with regulations and conditions of approval. Confirmed situations of noncompliance are enforced in accordance with *Directive 019*. A list of risk-assessed noncompliance events and associated compliance categories is on the ERCB Web site www.ercb.ca under Home : Industry Zone : Compliance and Enforcement : Risk Assessed Noncompliance.

The level of noncompliance for operational deficiencies is given in Appendix 1. ERCB Fort McMurray Regional Office inspectors use these levels when completing the Oil Sands Mining and Processing Plant Operation Inspection Check Sheet and determining the resulting enforcement action.

ERCB Energy Resources Conservation Board

Oil Sands Mining and Processing Plant Operation Inspection Check Sheet

FACILITY NAME | LOCATION | APPROVAL NUMBER

INSPECTION DATE

A. TYPE OF INSPECTION

- ☐ Initial
- ☐ Follow-up
- ☐ Surveillance
- ☐ Audit
- ☐ Investigation
- ☐ Other (Specify) _____

B. OPERATION AT TIME OF INSPECTION

- ☐ Mining / Producing
- ☐ Shut down
- ☐ Other (specify) _____

C. INSPECTION RESULTS (Code: Satisfactory "X", Low Risk "L", High Risk "H")

C1. Mining / Tailings

1 ☐ Mining

2 ☐ Tailings

C2. Processing Plants

Measurement/Conservation

3 ☐ Process Gas

4 ☐ Hydrocarbon Liquids

☐ Tailings Production

☐ Other Products

Equipment

7 ☐ Spacing

8 ☐ Flare System

9 ☐ Drain System

10 ☐ Signage/Security

11 ☐ Storage Requirements

12 ☐ Vapour Recovery

Environment

13 ☐ Odour Emissions

14 ☐ Noise Emissions

15 ☐ Housekeeping

16 ☐ Spills

17 ☐ Other Releases

18 ☐ Pits

19 ☐ Fire

20 ☐ Emergency Response Plans

C3. Other ERCB Requirements

21 ☐ Approvals

22 ☐ Reports

23 ☐ Records

24 ☐ Other

C4. Enforcement

(Code: Yes "Y", No "N")

25 ☐ Remedial Action Required by Operator

26 ☐ Action Plan Required by Operator

27 ☐ Letter to Operator Required

28 ☐ Facility Suspended

29 ☐ Records Review of Operator Compliance

ENFORCEMENT ACTION	
☐	Satisfactory Inspection (no action required)
☐	Unsatisfactory Inspection (Action Required)

Noncompliance Level:

Consequence of Noncompliance:

D. COMMENTS

Operator's Name and Signature _____ Operator's Phone Number _____

Inspector's Name and Signature _____ Inspector's Phone Number _____

Inspector's Fax Number _____ Deadline Date _____

The operator must confirm the completion/repair of noncompliance items to the Fort McMurray Regional Office.

Energy Resources Conservation Board, Fort McMurray Regional Office, 9915 Franklin Avenue, Fort McMurray, Alberta T9H 2K4

2 Inspection and Check Sheet Completion

2.1 When to Use the Check Sheet

The ERCB inspector must complete an Oil Sands Mining and Processing Plant Operation Check Sheet when conducting a physical inspection of a production facility. Not all items on the check sheet are required to be checked for every inspection. Do not check a box for any item not inspected. Ensure that the inspection is entered on the ERCB Fort McMurray Regional Office database for oil sands mining and processing plant operations in the oil sands mining area. The check sheet is to be used as a written record of every inspection item examined.

The ERCB inspector must also complete a check sheet if a facility is inspected as the result of a complaint or when a facility is inspected by the ERCB air-monitoring unit. The results, including any noted problems and deficiencies, are recorded on the check sheet.

With the exception of follow-up inspections, do not complete the check sheet unless an actual physical inspection of a production facility is conducted.

2.2 How to Complete the Oil Sands Mining and Processing Plant Operation Check Sheet

Note that the check sheet is in abbreviated form. Each item on the form may require several items to be inspected. Each deficient item should be noted in the most appropriate place.

Leave a copy of the inspection form with the operator or fax a copy to a company representative after completion of each inspection.

Facility Identification

Facility Name	Enter the complete name of the facility, as recorded in the ERCB Fort McMurray Regional Office database for oil sands mining and processing plant operations in the oil sands mining area.
Location	Enter the facility location (township, range, and meridian).
Approval Number	Enter the approval number.
Inspection Date	Enter the date of the inspection.

A. Type of Inspection

Check one of the following:

Initial – an inspection not considered a follow-up.

Follow-up – an inspection performed due to an unsatisfactory initial inspection. All follow-ups regarding low risk unsatisfactory items are to be done by telephone or e-mail whenever possible. High risk unsatisfactory items must be followed up on with a physical inspection. Follow-up inspections for high risk unsatisfactory inspections at facilities must be conducted within 30 days. A follow-up inspection (reinspection) is not considered in and of itself to be a satisfactory inspection for the purposes of achieving compliance to be removed from the enforcement process.

Surveillance – a routine field inspection.

Audit

- A "reporting audit" is an audit of the operator's records to ensure compliance with the acts and regulations and that reporting is in accordance with the operator's approved *S-23 Production Accounting Manual* (including calibration of flow meters, sampling, and material balances). It could also be a follow-up on resource conservation issues.
- An "operational" audit is conducted on oil sands mining and processing plant operations and on-site pilot plant technology testing.

Investigation – an investigation of an incident.

Other – any other type of inspection (identify), including complaint-driven inspections, ERCB air-monitoring unit inspections, and those triggered by explosions, fires, sulphur block and coke storage, or any other requests.

B. Operation at Time of Inspection

Check one of the following:

Mining/Producing – Facility is operating (include general observations noted about the operation during inspection, such as mine status, plant status, equipment status).

Shut down – Facility is not operating.

Other – Facility is being discontinued, equipment has been removed, site is being reclaimed.

C. Inspection Results

All items inspected, except those in the Enforcement category, must be marked "X" for satisfactory, "L" for Low Risk unsatisfactory, and "H" for High Risk unsatisfactory.

Items in the Enforcement category must be marked "Y" for yes or "N" for no. See Appendix 1 for possible unsatisfactory items.

Any irregularities found during the inspection should be noted and discussed with a company representative. If required, further investigation and follow-up will occur after the inspection by ERCB staff to determine or confirm noncompliance.

C1. Mining / Tailings

1 Mining / 2 Tailings

a) To meet the requirements of Section 27(a) of the *OSCR*, an operator must carry out a mining or tailings operation in a manner that does not render the recovery of other oil sands more difficult. For example,

- An operator must construct geotechnically stable structures by following an approved design, or the operation, maintenance and surveillance (OMS) manual, or best industry practices when constructing stockpiles, waste disposal areas, tailings ponds, and pit walls.
- An operator must have approval from the ERCB to construct stockpiles, waste disposal areas, tailings ponds, and pit walls.
- An operator must comply with conditions of approval when constructing stockpiles, waste disposal areas, tailings ponds, and pit walls.

b) To meet the requirements of Section 27(c) of the *OSCR*, an operator must carry out a mining or tailings operation in a manner that ensures public safety. For example,

- An operator must construct geotechnically stable structures by following an approved design, or the OMS manual, or best industry practices, when constructing stockpiles, waste disposal areas, tailings ponds, and pit walls.

c) An ERCB inspector conducting a mine inspection must also complete the Mining Inspection and Observation Sheet (see Appendix 4).

C2. Processing Plants

Measurement/ Conservation

3 Process Gas

3.1 General

a) Meter run and measurement devices must be installed and operated as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

b) Meter calibrations must be conducted as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

3.2 Fuel Gas

a) Fuel gas measurement must be as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22, of the *OSCR*.

3.3 Flared/Vented Gas

a) Flare gas volumes, including emergency flaring, must be measured continuously or estimated as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

b) Stock tank vapours must be estimated as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

c) The operator of a processing plant must not discharge any gas containing hydrogen sulphide (H_2S), unless it is burned so that essentially all of the sulphur is converted to sulphur dioxide (SO_2), in accordance with Section 51 of the *OSCR*.

d) Gas discharged must be burned in accordance with Sections 6 and 7(1)(b) of the *OSCR* to meet the requirements of Section 7(2) of the *OSCR*.

3.4 Acid Gas

a) Sulphur plant inlet and outlet must be measured as specified and approved in the operator's *S-23 Production Accounting Manual* to determine a sulphur recovery to meet the requirements of *ID 2001-03* and Sections 20, 21, and 22 of the *OSCR*.

b) Emergency acid gas flaring from gas sweetening systems must be measured as specified and approved in the operator's *S-23 Production Manual* to meet the requirements of Section 22 of the *OSCR*.

c) An operator must maximize the gathering of gaseous mixtures containing H_2S for delivery to the sulphur recovery plant (e.g., by ensuring that vapour recovery units are being operated) to meet the requirements of *ID 2001-03* and Section 49(e) of the *OSCR*.

4 Hydrocarbon Liquids (crude bitumen, derivatives of crude bitumen, diluent, or solvent)

4.1 Extraction

a) For oil sands feed, rejects, primary extraction tailings, froth treatment product, froth treatment tailings, and diluent/solvent recovery unit tailings,

   i) meter run and measurement devices must be installed and operated as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*,

   ii) sampling must be conducted as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20 , 21, and 22 of the *OSCR*, and

   iii) samples must be analyzed using standard analytical techniques as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

b) Metering must be calibrated as specified or approved in the

operator's *S-23 Production Accounting Manual* to meet the requirements of Section 22 of the *OSCR*.

4.2 Upgrading

a) For diluent recovery unit (DRU) feed, make-up diluent or solvent, and tank farm and diversion streams (upgrading waste water that includes oily water sewer, API separators discharge, and slops not recovered),

   i) meter run and measurement devices must be installed and operated as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*,

   ii) sampling must be conducted as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*, and

   iii) samples must be analyzed using standard analytical techniques as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

b) Meter must be calibrated as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Section 22 of the *OSCR*.

4.3 Delivery Point Measurement

a) Measurement, sampling, and sample analyses of imported, produced, or exported bitumen must be developed as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

b) Measurement, sampling, and sample analyses of diluent or solvent and upgraded products must be developed as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

c) Trucked-in bitumen must be measured as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

5 Tailings Production

a) Tailings production must be measured or determined as specified and approved in the operator's *S-23 Production Accounting Manual* for flow and composition to meet the requirements of Sections 20, 21, and 22 of the *OSCR*.

6 Other Products

6.1 Sulphur

a) Sulphur production must be measured as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Section 20 of the *OSCR*.

b) Sulphur storage and discard must be in accordance with Section 49(c) of the *OSCR*. For example, any sulphur that has spilled in the sulphur plant, at block, at truck, or at loading site must be cleaned up immediately and moved to a suitable location.

6.2 Coke

a) Coke production must be measured or determined as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Section 20 of the *OSCR*.

b) Coke storage and discard must be in accordance with Section 49(c) of the *OSCR*. For example, any coke that has spilled or leaked from pipelines, vessels, or trucks must be removed to a suitable location.

6.3 Asphaltenes

a) Asphaltene production must be measured or determined as specified and approved in the operator's *S-23 Production Accounting Manual* to meet the requirements of Section 20 of the *OSCR*.

b) Asphaltene storage and discard must be in accordance with Section 49(c) of the *OSCR*. For example, any asphaltene that has spilled or leaked from pipelines, vessels, or trucks must be removed to a suitable location.

6.4 Fertilizer

a) Storage or disposal of fertilizers must be in accordance with Section 49(c) of the *OSCR*. For example, any fertilizer spilled must be removed to a suitable location.

Equipment

7 Spacing

a) Equipment spacing must be in accordance with Sections 8.090(2) of the *OGCR*, as referred to in Appendix 2 of this directive, to meet the requirements of Section 9 of the *OSCR*.

b) Pressure relief valves and burst plates are considered a source of ignitable vapours. If they are located in the same process building as flame-type equipment, they must be vented above roof level, in accordance with Section 8.090(6) of the *OGCR*, as referred to in Appendix 2 of this directive, to meet the requirements of Section 3(g) of the *OSCA*.

8 Flare System

a) Any significant volume of gas directed to a flare stack or incinerator must be burned as specified in Section 8.080 of the *OGCR*, as referred to in Appendix 2 of this directive, to meet the requirements of Section 51 of the *OSCR*.

b) Vent lines from storage tanks directed to flare stacks must be provided with flame arresters or other equivalent safety devices, in accordance with Section 8.090(7) of the *OGCR*, as referred to in Appendix 2 of this directive, to meet the requirements of Section 3(g) of the *OSCA*.

9 Drain System

a) All hydrocarbon process piping drains must be bull-plugged to meet the requirements of Section 3(g) of the *OSCA*.

b) Vessel drains, lube oil drains, and floor drains must be tied into a suitable containment and recovery system, (e.g., slop system or oily water separator) to meet the requirements of Section 3(g) of the *OSCA*.

10 Signage/Security

a) Identification and warning signs must be erected at the entrance of an oil sands site when the H_2S content is greater than 10 moles per kilomole (mol/kmol) or any lower concentration stipulated by the ERCB, in accordance with Section 6.020 of the *OGCR*, to meet the requirements of Section 7(1) of the *OSCR*.

b) Facilities where the gas has more than 10 mol/kmol H_2S must be fenced, in accordance with Section 8.170 of the *OGCR*, as referred to in Appendix 2 of this directive, to meet the requirements of Section 9 of the *OSCR*.

11 Storage Requirements

a) Specific sections of *Directive 055* apply to all green field sites and to future expansions or new installations at existing facilities, except for grandfathered facilities, as referred to in Appendix 2 to meet the requirements of Section 3(g) of the *OSCA*.

   i) Applicable material must be stored in accordance with specific sections of *Directive 055*, as referred to in Appendix 2 of this directive, and in accordance with the requirements of this directive.

   ii) Requirements of specific sections of *Directive 055* referred to in Appendix 2 of this directive do not apply to tailings ponds, extraction primary separation vessels, thickeners, emergency dump ponds, and processing equipment.

   iii) Nongrandfathered facilities and new installations at existing facilities must comply with the requirements for containers, lined earthen excavations, and bulk pads.

   iv) See Appendix 5 of this directive for a summary of the general requirements for permanent storage facilities, in accordance with Section 4 of *Directive 055*, as referred to in Appendix 2 of this directive.

   v) Underground storage tanks, including associated piping, oily water sewers, process drains, sumps, API separators, and slop systems must meet the requirements of Section 6 of *Directive 055*, as referred to in Appendix 2 of this directive.

b) Grandfathered facilities listed in Appendix 6 have the option to meet the requirements of specific sections of *Directive 055*, as referred to in Appendix 2 of this directive, for their storage practices, facilities, and containment devices. Facilities that choose not to comply with the requirements cited in Appendix 2 must comply with the integrity of aboveground and underground tanks tested at the frequency stated in Canadian Council of Ministries of the Environment (CCME) API 653 or Appendix 2 of *Directive 055* or retrofit the tanks to meet the secondary containment and leak detection requirements.

12 Vapour Recovery

a) An operator must maximize the gathering and utilization of gas produced, in accordance with Section 49(d) of the *OSCR*.

b) Vapour recovery systems must have sufficient capacity to operate within the design service factor.

Environment

13 Odour Emissions

a) An operator must immediately notify the ERCB of emissions off site that have the potential to cause public concern, in accordance with Section 3(g) the *OSCA* (see Appendix 7).

b) Emissions contained within the lease area should be noted on the Oil Sands Mining and Processing Plant Operation Check Sheet. The operator or company representative must also be instructed to take corrective actions to reduce or eliminate minor emission sources.

14 Noise Emissions

a) Production facilities must meet the requirements in *Directive 038*.

b) Normally noise levels are not checked during a surveillance inspection. If a facility is inspected as a result of public concerns and a noise monitoring survey is requested, the results of the survey must be recorded on the inspection check sheet.

15 Housekeeping

a) Processing facilities must be maintained in a clean and safe condition, in accordance with Section 8.150(4) of the *OGCR*, as referred to in Appendix 2 of this directive, to meet the requirements of Section 9 of the *OSCR*.

b) Oil-stained areas must be cleaned up. If the spill material is removed, it must be disposed of in a manner as outlined in Section 8.050 of the *OGCR*, as referred to in Appendix 2 of this directive, to meet the requirements of Section 9 of the *OSCR*.

c) All dikes and firewalls must be maintained in good condition and the area must be kept free of grass, weeds, or other combustible materials, in accordance with Section 5.3.2.1(a)(4) of *Directive 055*, as referred to in Appendix 2 of this directive.

16 Spills

a) Contaminated spill materials must be handled and disposed of in accordance with Section 8.050 of the *OGCR*, as referred to in Appendix 2 of this directive.

b) ERCB inspectors are expected to use discretion when differentiating between spill and housekeeping deficiencies. However, spillage having the potential to adversely impact the environment must be considered a spill rather than a housekeeping deficiency. The following situations are considered examples of a spill rather than a housekeeping deficiency:

- areas with pooled hydrocarbons or areas heavily caked with hydrocarbons,
- extensive staining throughout the lease area,
- cumulative spillage of small volumes of hydrocarbons over a long period of time, and
- spills outside the lease area.

17 Other Releases	a)	An operator must immediately notify the ERCB of releases off site that have the potential to cause public concern, in accordance with Section 3(g) of the *OSCA*, as specified in *IL 98-1* and as referred to in Appendix 2 of this directive (see Appendix 7).
18 Pits	a)	Pits must not be used as storage for crude bitumen, liquid hydrocarbons, process chemicals, or water produced from a facility, in accordance with Section 8.010 of the *OGCR*, as referred to in Appendix 2 of this directive.
19 Fire	a)	An operator must prevent loss, injury, damage, and fire at an oil sands site, in accordance with Section 9 of the *OSCR*. To prevent fire, the operator must keep operating procedures current.
20 Emergency Response Plans	a)	Emergency response plans (ERPs) for processing facilities must be submitted on request, in accordance with Section 8 of the *OSCR*.
	b)	An operator must notify the ERCB and participate in a spill deployment exercise annually, in accordance with Section 8.052 of the *OGCR*, to meet the requirements of Section 9 of the *OSCR*.

C3. Other ERCB Requirements

21 Approvals	a)	An operator must not commence, suspend, or abandon an oil sands site, an experimental scheme, a mining operation, or a processing plant until the ERCB has granted approval to do so, in accordance with Section 3(1) of the *OSCR*.
	b)	An operator must not commence any substantial modification at an oil sands site, an experimental scheme, a mining operation, or a processing plant until the ERCB has granted approval to do so, in accordance with Section 3(2) of the *OSCR*.
	c)	An operator must construct and operate in compliance with all conditions of approval and other ERCB requirements.
	d)	An operator must obtain approval of the ERCB for storage or disposal of any oil sands or discard accumulated during mining or overburden removal, in accordance with Section 24 of the *OSCR*.
	e)	The location, dimensions, and elevation of mine storage or disposal structures, such as stockpiles, waste areas, and tailings ponds, must not exceed the conditions of approval.
	f)	An operator must obtain the approval of the ERCB for a mine site plan and for any changes to an approved annual mine plan that would reduce the amount of oil sands recovered, in accordance with Section 26 of the *OSCR*.
	g)	Tailings management must be in accordance with the approval.
	h)	An operator must not waste any significant amount of liquid hydrocarbons except in cases of emergency unless authorized in

writing by the ERCB, in accordance with Section 11 of the *OSCR*.

i) An operator of an oil sands site must not cause or permit the burning of crude bitumen, gas, oily water, discard, or other material unless it has obtained written approval from the ERCB or its authorized representative, as stated Section 10(1) of the *OSCR*.

j) For the purpose of energy conservation, an operator must apply for and obtain approval for the storage or disposal of any oil sands, coke, sulphur, precipitator ash, or other hydrocarbon effluent or discard associated with the processing plant, in accordance with Section 48 of the *OSCR*. Coke and sulphur storage approval must be administered in accordance with *IL 96-07*.

22 Reports

a) An operator must report any collapse or instability within a mine site resulting in a change to the approved mine site plan, an interruption of mining, and the possibility of permanent loss of recoverable oil sands, in accordance with Section 32(2) of the *OSCR*.

b) An operator must report to the ERCB by the quickest effective means if an effluent is being burned under emergency conditions, in accordance with Section 10(2) of the *OSCR*.

c) Six months after commencement of operations or after any modifications that required an amendment to the approval, an operator must file with the ERCB the design and operating parameters, in accordance with Section 54(a) of the *OSCR*.

d) On or before the 22nd day of each month, an operator producing H_2S or other sulphur compounds must file with the ERCB statements of monthly and, if required, daily totals of plant input and output for the preceding calendar month in the form of a processing plant sulphur balance and a sulphur plant sulphur balance, including the details, in accordance with Section 57(1) of the *OSCR*.

e) On or before the 28th day of February of each year, an operator must file with the ERCB a report of operations conducted during the preceding calendar year, including the details as specified in the Section 58 of the *OSCR*.

f) By September 30 each year, an operator must submit to the ERCB for its approval details of its annual mine plan for the next calendar year of operation, in accordance with Section 30 of the *OSCR*.

g) On or before the 22nd day of each month, an operator must file with the ERCB monthly statements on Form S-23 of the oil sands, crude bitumen, oil sands products, marketable gas, and condensate received at the plant and the quantity of oil sands products derived, stored, and delivered for the preceding month, in accordance with Section 56 of the *OSCR*.

h) An operator must report to the ERCB by the quickest effective means any liquid spill and any break or leak in a vessel, gathering line, or other equipment that occurs at an oil sands site where the loss exceeds 2 cubic metres (m^3) of liquid hydrocarbon or 30 000 m^3 of gas or gas equivalent or where significant damage to equipment occurs, in accordance with Section 13(1)(a)(b) of the *OSCR*. Spills of refined products are the responsibility of AENV, as specified in *IL 96-07*. An operator must notify the AENV Pollution Control Division of any refined product spills. (See Appendix 7.)

i) An operator must report to the ERCB by the quickest effective means any fire that occurs at an oil sands site, including the sulphur storage block or handling facility, that requires major fire-fighting equipment and resources. When so directed by the ERCB, the operator must further report by letter within two weeks of the ERCB's direction. These reports are in accordance with Section 13(1)(c) of the *OSCR*. (See Appendix 7.)

23 Records

a) An operator must maintain and keep available on site a record of tailings management, in accordance with Section 14 of the *OSCR*. For example, record

- performance of tailings treatment systems (e.g., record of plant availability or nonavailability, time of off-specification or on-specification production),
- thickener operation, if applicable, and
- other tailings technologies used.

b) An operator must maintain records of tailings piping integrity (e.g., measurements of wall thicknesses, time lapse between pipe rotations) on site and provide the record to the ERCB on request, in accordance with Sections 14 and 55 of the *OSCR*.

c) An operator of an oil sands site must keep any other records and file with the ERCB any other reports that the ERCB may by order require, in accordance with Section 14 of the *OSCR*.

d) An operator must retain records at the place and by the person specified by the *OSCR* for a period of 18 months from the time the record is made or any other period specified by the ERCB, in accordance with Section 17 of the *OSCR*.

e) An operator must keep at the plant site or other place of business a daily record of all oil sands, crude bitumen, and oil sands products (e.g., sulphur, coke, fertilizer, asphaltenes, flared/vented volumes) received into the processing plant, with details, in accordance with Section 55 of the *OSCR*.

24 Other

a) An operator must use the units and methods of measurement and standard conditions stipulated in Section 19 of the *OSCR* whenever the measurement of oil sands, crude bitumen, derivatives of crude bitumen, or oil sands products is required by the provision of an act, regulation, order, direction, term, or condition made by the ERCB,

whether the provision deals with conservation, preservation, utilization, taxation, or royalties.

b) An operator must provide the ERCB access at its plant site to piping and measurement drawings, operating procedures, and equipment specifications, in accordance with Section 54(b) of the *OSCR*.

c) An operator must comply with all other ERCB requirements not specified elsewhere in this directive. This includes compliance with current ERCB regulations, interim directives (IDs), informational letters (ILs), directives, policies, and any approvals relevant to the oil sands mining and processing plant operations in the oil sands mining area.

C4. Enforcement

25 Remedial Action Required by Operator

Enter "Y" (yes) if unsatisfactory items are noted that require remedial action. Enter "N" (no) if remedial action is not required and the inspection is considered satisfactory. See *Directive 019* for further details.

26 Action Plan Required by Operator

Enter "Y" (yes) if unsatisfactory items are noted that require an action plan. Enter "N" (no) if no action plan is required.

27 Letter to Operator Required

Enter "Y" (yes) if a letter to the company is required. Enter "N" (no) if a letter is not required. See *Directive 019* for further details.

28 Facility Suspended

Enter "Y" (yes) if the facility is being partially or fully suspended as a result of noncompliance. Enter "N" (no) if the facility is not suspended. See *Directive 019* for further details.

29 Records Review of Operator Compliance

Enter "Y" (yes) if the records were reviewed for the inspection. Enter "N" (no) if records were not reviewed for the inspection. See Appendix 8 for further details.

Enforcement Action

Enter "X" if the inspection is satisfactory.

Enter the appropriate code if the inspection is unsatisfactory.

Indicate the appropriate noncompliance level and escalating consequence level of future noncompliance, in accordance with *Directive 019*.

	Clearly define the necessary work that must be completed by the operator in the Comments section.
Operator's name and signature	Print the full name of the operator of the inspected facility and be sure that the operator signs the completed inspection sheet.
Operator's phone number	Enter the operator's phone number, including area code.
Inspector's name and signature	Enter the inspector's name and sign the completed inspection sheet.
Inspector's phone number	Enter the inspector's phone number, including area code.
Inspector's fax number	Enter the inspector's fax number, including area code.
Deadline date	Enter the date by which the necessary work detailed under Comments must be completed.
2.3 Submission of Check Sheet	Give the operator a copy of the completed check sheet. File the completed Oil Sands Mining and Processing Plant Operation Check Sheet with Fort McMurray Regional Office.

Appendix 1 Operational Deficiencies

The level of each deficiency is based on the criteria set out in *Directive 019: ERCB Compliance Assurance—Enforcement.*

Inspection Results

The ERCB uses a risk assessment matrix to predetermine the level of risk inherent in noncompliance with each ERCB requirement. Each requirement has an associated Low Risk or High Risk rating based on health and safety, environmental impact, conservation, and stakeholder confidence in the regulatory process.

The ERCB will escalate enforcement actions if conditions warrant, as described in *Directive 019.*

Compliance and Noncompliance Results

Inspection results are rated "X" – satisfactory, "L" – Low Risk unsatisfactory, or "H" – High Risk unsatisfactory. Items below are numbered in accordance with the Oil Sands Mining and Processing Plant Operation Check Sheet.

C1. Mining/Tailings

1 Mining / 2 Tailings

L 1) Mining or tailings operation makes the recovery of other oil sands more difficult (Section 27(a) of the *OSCR*).

H 2) Mining or tailings operation does not ensure public safety (Section 27(c) of the *OSCR*).

C2. Processing Plants

Measurement / Conservation

3 Process Gas

3.1 General

L 1) Meter run and measurement device not installed and operated as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20, 21, and 22 of the *OSCR*).

L 2) Meter not operating or not properly in service.

L 3) Meter subject to excessive pulsation or swinging.

L 4) Meter not calibrated since installation, not calibrated following repairs, or calibration expired.

L 5) Meter calibrations not conducted as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20, 21, and 22 of the *OSCR*).

3.2 Fuel Gas

L 1) Fuel gas measurement not conducted as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20, 21, and 22 of the *OSCR*).

L 2) Meter not operating or not properly in service.

L 3) Meter subject to excessive pulsation or swinging.

L 4) Meter not calibrated since installation, not calibrated following repairs, or calibration expired.

3.3 Flared/Vented Gas

L 1) Flare gas volumes, including emergency flaring, not measured continuously or estimated as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20, 21, and 22 of the *OSCR*).

L 2) Stock tank vapours not estimated as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20, 21, and 22 of the *OSCR*).

L 3) Failure to completely burn any gas containing H_2S so that essentially all the sulphur is converted to SO_2 (Section 51 of the *OSCR*).

H 4) Gas discharged not burned in accordance with Sections 6 and 7(1)(b) of the *OSCR* (Section 7(2) of the *OSCR*).

3.4 Acid Gas

H 1) Sulphur plant inlet and outlet not measured as specified and approved in operator's *S-23 Production Accounting Manual* to determine a sulphur recovery (*ID 2001-03* and Sections 20, 21, and 22 of the *OSCR*).

H 2) Emergency acid gas flaring from gas sweetening systems not measured as specified and approved in operator's *S-23 Production Accounting Manual* (Section 22 of the *OSCR*).

H 3) Operator not maximizing the gathering of gaseous mixtures containing H_2S for delivery to the sulphur recovery plant (*ID 2001-03* and Section 49(e) of the *OSCR*).

4 Hydrocarbon Liquids (crude bitumen, derivatives of crude bitumen, diluent, or solvent)

4.1 Extraction

1) For oil sands feed, rejects, primary extraction tailings, froth treatment product, froth treatment tailings, and diluent or solvent recovery unit tailings:

L a) Meter run and measurement devices not installed and operated as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20 and 22 of the *OSCR*).

L b) Sampling not conducted as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20 and 22 of the *OSCR*).

L c) Samples not analyzed using standard analytical techniques as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20 and 22 of the *OSCR*).

L 2) Meter not calibrated as specified and approved in operator's *S-23 Production Accounting Manual* (Section 22 of the *OSCR*).

L 3) Hydrocarbon liquids not measured as specified and approved in operator's *S-23 Production Accounting Manual* (Section 21 of the *OSCR*).

L 4) Hydrocarbon liquids in tanks not measured by tank gauge as required in Appendix 9 or by using another acceptable measuring device.

4.2 Upgrading

1) For DRU feed, make-up diluent or solvent, and tank farm and diversion streams (upgrading waste water that includes oily water sewer, API separators discharge, and slops not recovered):

L a) Meter run and measurement devices not installed and operated as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20 and 22 of the *OSCR*).

L b) Sampling of crude bitumen/intermediate product/synthetic crude oil (SCO)/diluent/solvent not conducted as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20 and 22 of the *OSCR*).

L c) Samples not analyzed using standard analytical techniques as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20 and 22 of the *OSCR*).

L 2) Meter not calibrated as specified and approved in operator's *S-23 Production Accounting Manual* (Section 22 of the *OSCR*).

L 3) Hydrocarbon liquids not measured as specified and approved in operator's *S-23 Production Accounting Manual* (Section 21 of the *OSCR*).

4.3 Delivery Point Measurement

L 1) Measurement, sampling, and sample analyses of imported, produced, or exported bitumen not conducted as specified and approved in operator's *S-23 Production Accounting Manual* (Sections 20 and 22 of the *OSCR*).

L 2) Measurement, sampling, and sample analyses of diluent or solvent and upgraded products not conducted as specified and approved in operator's *S-23 Production Accounting Manual* Sections 20, 21, and 22 of the *OSCR*).

L 3) Trucked-in bitumen not measured as specified and approved in *S-23 Production Accounting Manual* and must be further developed (Sections 20 and 22 of the *OSCR*).

L 4) Hydrocarbon liquids not measured as specified and approved in operator's *S-23 Production Accounting Manual* (Section 21 of the *OSCR*).

5 Tailings Production

L 1) Tailings production not measured or determined as specified and approved in operator's *S-23 Production Accounting Manual* for flow and composition (Sections 20, 21, and 22 of the *OSCR*).

6 Other Products

6.1 Sulphur

L 1) Sulphur production not measured as specified and approved in operator's *S-23 Production Accounting Manual* (Section 20 of the *OSCR*).

H 2) Sulphur storage and discard not in accordance with Section 49(c) of the *OSCR* (e.g., any sulphur that has spilled in the sulphur plant, at block, at truck, or at loading site not cleaned up immediately and moved to a suitable location).

L 3) Sulphur volumes not measured or determined in sulphur pit. Pit gauging equipment or procedures inadequate (e.g., estimates not using sound engineering practices).

6.2 Coke

L 1) Coke production not measured or determined as specified and approved in operator's *S-23 Production Accounting Manual* (Section 20 of the *OSCR*).

H 2) Coke storage and discard not in accordance with Section 49(c) of the *OSCR* (e.g., any coke that has spilled or leaked from pipelines, vessels, or trucks that has not been removed to a suitable location).

6.3 Asphaltenes

L 1) Asphaltene production not measured or determined as specified and approved in operator's *S-23 Production Accounting Manual* (Section 20 of the *OSCR*).

H 2) Asphaltene storage and discard not in accordance with Section 49(c) of the *OSCR* (e.g., any asphaltene that has spilled or leaked from pipelines, vessels, or trucks that has not been removed to a suitable location).

6.4 Fertilizer

H 1) Storage or disposal of fertilizers not in accordance with Section 49(c) of the *OSCR* (e.g., any fertilizer spilled that has not been removed to a suitable location).

7 Spacing

L 1) Fire ignition source less than 50 m from a hydrocarbon liquid storage tank (Section 8.090(2) of the *OGCR*).

L 2) Fire less than 50 m from a source of ignitable vapours (Section 8.090(2) of the *OGCR*).

H 3) Pressure relief valves and burst plates not vented above roof level (Section 8.090(6) of the *OGCR*, Section 3(g) of the *OSCA*).

8 Flare System

L 1) Significant volume of gas directed to a flare stack or incinerator not burned as specified in Section 8.080 of the *OGCR* (Section 51 of the *OSCR*).

H 2) No flame arrestor on line from tank to flare stack where required (Section 8.090(7) of the *OGCR* , Section 3(g) of the *OSCA*).

9 Drain System

L 1) Bull plugs not installed on hydrocarbon process piping drains (Section 3(g) of the *OSCA*).

L 2) Vessel drains, lube oil drains, and floor drains not tied into a suitable containment and recovery system (e.g., slop system or oily water separator) (Section 3(g) of the *OSCA*).

10 Signage/Security

L 1) Identification and warning signs not erected at the entrance of an oil sands site when H_2S content is greater than 10 mol/kmol or any lower concentration stipulated by the ERCB (Section 6.020 of *OGCR*, Section 7(1) of the *OSCR*).

L 2) Improper identification sign.

L 3) Facilities in excess of 10 mol/kmol H_2S not fenced (Section 8.170 of the *OGCR*, Section 9 of the *OSCR*).

11 Storage Requirements

Specific sections of *Directive 055* apply to all green field sites and to future expansions or new installations at existing facilities, except grandfathered facilities, as referred to in Appendix 2 to meet the requirements of Section 3(g) of the *OSCA*. See Appendix 6 for the list of grandfathered facilities.

A) General storage practices (Section 3 of *Directive 055*)

L 1) Materials not consumed within two years (standard industry practice).

H 2) Temporary single-walled aboveground tank not diked (unless operation qualifies for it to be optional).

H 3) Contaminated material stored directly on the ground.

B) Storage areas/facilities (Section 3.6 of *Directive 055*)

L 1) Not readily accessible for fire fighting and other emergency procedures.

L 2) Located within 100 m of normal high-water mark of a body of water, permanent stream, or water well used for domestic purposes.

C) Aboveground storage tank(s) with an internal volume less than 5 m^3 (Section 5.1 of *Directive 055*)

L 1) Not externally coated or made from weather- and corrosion-resistant material.

D) Aboveground storage tank(s) with internal volume equal to or greater than 5 m^3 (Section 5.3 of *Directive 055* except (11) below)

L 1) Steel tank(s) not externally coated.

L 2) Spill control device(s) not installed/inadequate.

L 3) No measures in place to prevent overfilling of tanks.

H 4) No tank dike where required.

L 5) Liner not installed where required or insufficient liner.

L 6) Tank loading/unloading areas not designed to contain spills or leaks.

L 7) Tank dike(s) deteriorating, developing leaks, or unable to withstand hydrostatic head.

L 8) Insufficient tank dike capacity.

L 9) Tank dike(s) contain openings (e.g., open dike drains).

L 10) Impervious liner does not cover the dike and the area within the dike or not keyed into dike walls where applicable.

L 11) Integrity of aboveground tanks unable to comply with the frequency stated in either Canadian Council of Ministries of the Environment (CCME), API 653, Appendix 2 of *Directive 055* or unable to meet the secondary containment and leak detection requirements for grandfathered facilities listed in Appendix 6.

L 12) Inadequate leak detection methods.

L 13) Indoor aboveground storage tanks not surrounded by containment device and/or drain and collection tank with sufficient capacity.

E) Double-walled tanks with internal volume greater than 5 m^3 (Section 5.3.3 of *Directive 055*)

L 1) No measures in place to prevent overfilling of tank(s) (alarms/automatic shutoffs).

L 2) Spill control device(s) not installed or inadequate.

L 3) No system to monitor interstitial space.

L 4) No protection from vehicular damage (e.g., barriers to protect tank from vehicular damage, controlled access to site).

L 5) Automatic shutdown system or interstitial space not checked on a monthly basis.

F) Underground storage tank(s), including associated piping, oily water sewer, process drains, sumps, API separators, slop systems (Section 6 of *Directive 055* except (9) below)

H 1) No leak detection and secondary containment where required.

H 2) Underground storage tank(s) not double walled.

H 3) Newly installed tank(s) and associated piping not tested prior to service.

L 4) Steel tank(s) not cathodically protected or externally coated.

L 5) Tank loading/unloading areas not designed to contain spills or leaks.

L 6) Spill control devices not installed or inadequate.

L 7) Tank breathing vents not designed to prevent fluid overflow.

L 8) No measures in place to prevent overfilling of tanks.

H 9) Integrity of underground tanks unable to comply with the frequency stated in either Canadian Council of Ministries of the Environment (CCME), API 653, Appendix 2 of *Directive 055* or unable to meet the secondary containment and leak detection requirements for grandfathered facilities listed in Appendix 5.

G) Storage containers with combined volume greater than 1 m^3 on site (Section 7 of *Directive 055*)

L 1) Insufficient or no secondary containment (lined compound with dikes/curbs and collection trays).

L 2) No weather protection where required.

H) Bulk pads for the storage of solid materials (Section 9 of *Directive 055*)

L 1) Using concrete as primary containment where there is a potential for stored materials to leach out.

H 2) Not constructed of compacted clay, synthetic liner, concrete, or asphalt.

L 3) No continuous curb on three sides and/or curb height not minimum 15 centimetres (cm).

L 4) No leachate collection or leak detection system where required.

I) Inspection, monitoring, and record keeping (Section 10 of *Directive 055*)

L 1) Inventory records for the last two years not available.

L 2) Records of inspection and corrosion monitoring programs not available.

L 3) Other records not available where required.

L 4) Applicable approvals, licences, or permits not on site or at field/plant offices.

J) Withdrawal of storage tanks from service (Section 12 of *Directive 055*)

L 1) Aboveground/underground tanks out of service do not meet the requirements.

12 Vapour Recovery

L 1) Failure to maximize the gathering and utilization of gas produced (Section 49(d) of the *OSCR*).

H 2) Vapour recovery equipment inadequate or not operable (e.g., flame arrester plugged, thief hatch not sealing, venture not working, vapour recovery compressor down).

Environment

13 Odour Emissions

H 1) Operator failed to immediately notify the ERCB of H_2S emissions off site that have the potential to cause public concern (Section 3(g) of the *OSCA*).

L 2) Operator failed to immediately notify the ERCB of other emissions off site (hydrocarbon, marcaptan, etc.) that have the potential to cause public concern (Section of 3(g) of the *OSCA*).

14 Noise Emissions

H 1) Production facilities not meeting the requirements of *Directive 038* (Section 3(g) of the *OSCA*).

15 Housekeeping

L 1) Processing facilities not maintained in a clean and safe condition (Section 8.150(4) of the *OGCR*, Section 9 of the *OSCR*).

L 2) Disposal of spill material not in accordance with Section 8.050 of the *OGCR* (Section 9 of the *OSCR*).

L 3) Garbage and loose debris not stored in accordance with Section 8.150(2)(a) of the *OGCR*.

L 4) Dikes and firewalls not maintained in good condition in accordance with Section 5.3.2.1(a)(4) of *Directive 055*.

16 Spills

H 1) Contaminated spill materials not handled and disposed of in accordance with Section 8.050 of the *OGCR*.

H 2) Unaddressed spill into water.

H 3) No notification of a reportable spill to the ERCB.

L 4) Late notification of a reportable spill to the ERCB.

17 Other Releases

H 1) No notification to the ERCB of a release off site that has the potential to cause public concern (Section 3(g) of the *OSCA, IL 98-01*).

18 Pits

H 1) Pits used as storage for crude bitumen, liquid hydrocarbons, process chemicals, or water produced from a facility (Section 8.010 of the *OGCR*).

19 Fire

L 1) Operator failed to prevent loss, injury, damage, and fire at an oil sands site (Section 9 of the *OSCR*).

20 Emergency Response Plans

L 1) ERPs for sour product processing facilities not submitted upon request (Section 8 of the *OSCR*).

L 2) Operator failed to participate and notify the ERCB of a spill deployment exercise (Section 8.052 of the *OGCR*, Section 9 of the *OSCR*).

C3. Other ERCB Requirements

21 Approvals

H 1) Facility operating without approval (Section 3(1) of the *OSCR*).

L 2) Facility not constructed or operating in compliance with condition of approvals and other ERCB requirements.

H 3) Facility not suspended in accordance with ERCB requirements (Section 3(1) of the *OSCR*).

H 4) Storage or disposal of any oil sands or discard accumulated during mining or overburden removal without approval (Section 24 of the *OSCR*).

H 5) Exceedance of approval conditions for storage or disposal areas, such as footprint, dimensions, and elevation (Section 24 of the *OSCR*).

H 6) Failure to obtain approval for a mine site plan and for any changes to an approved annual mine plan that would reduce the amount of oil sands recovered (Section 26 of the *OSCR*).

H 7) Failure to manage tailings in accordance with the approval.

L 8) Written approval not obtained to cause or permit the burning of crude bitumen, gas, oily waste, or discard or other material (Section 10(1) of the *OSCR*).

H 9) Venting, flaring, or wasting of any significant amount of gas without the permission of the ERCB not in a case of emergency (Section 11 of the *OSCR*).

H 10) Wasting of significant amount of liquid hydrocarbons not in a case of emergency (Section 11 of the *OSCR*).

H 11) Failure to obtain approval for the storage or disposal of any oil sands, coke, sulphur, precipitator ash, or other hydrocarbon effluent or discard associated with the processing plant (Section 48 of the *OSCR*).

H 12) Pit containing crude bitumen, liquid hydrocarbons, processed chemicals, or water produced from a processing facility without approval of the ERCB (Section 48 of the *OSCR*).

22 Reports

L 1) Failure to report any collapse or instability within the mine site that changes the approved mine plan (Section 32(2)(a) of the *OSCR*).

L 2) Failure to report any collapse or instability within the mine site that interrupts the operator's ability to continue mine operations (Section 32(2)(b) of the *OSCR*).

L 3) Failure to report any collapse or instability within the mine site that results in the possibility of a permanent loss of recoverable oil sands (Section 32(2)(c) of the *OSCR*).

L 4) Failure to appropriately report flared/vented volumes.

L 5) Failure to report to the ERCB by the quickest effective means an effluent being burned under emergency conditions (Section 10(2) of the *OSCR*).

L 6) Failure to provide the details that occurred during an incident (Section 13(2) of the *OSCR*).

L 7) Failure to file design and operating parameters 6 months after commencement of operations or after any modifications that required an amendment to the approval (Section 54(a) of the *OSCR*).

L 8) Failure by operator producing H_2S or other sulphur compounds to file on or before the 22nd day of each month statements of monthly and, if required, daily totals of plant input and output for the preceding calendar month in the form of a processing plant sulphur balance and a sulphur plant sulphur balance, including the details (Section 57(1) of the *OSCR*).

L 9) Failure to submit on or before the 28th day of February of each year a report of

operations conducted during the preceding calendar year, including the details (Section 58 of the *OSCR*).

L 10) Failure to submit to the ERCB for approval an annual mine plan for the next calendar year of operation on or before the 30th day of September (Section 30 of the *OSCR*).

L 11) Failure to submit monthly S-23 report (Section 56 of the *OSCR*).

H 12) Failure to immediately report to the ERCB any liquid spill or any break or leak in a vessel, gathering line, or other equipment that occurs at an oil sands site where the loss exceeds 2 m^3 of liquid hydrocarbon or 30 000 m^3 of gas or gas equivalent or where significant damage to equipment occurs (Section 13(1)(a)(b) of the *OSCR*, Section 8.050(2) of the *OGCR*).

H 13) Failure to immediately report to the ERCB any fire that occurs at an oil sands site, including the sulphur storage block or handling facility, that requires major fire-fighting equipment and resources (Section 13(1)(c) of the *OSCR*).

23 Records

L 1) Record of tailings management performance not maintained and kept available on site (Sections 14 and 55 of the *OSCR*).

L 2) Failure to maintain and provide to the ERCB records of tailings piping integrity (Sections 14 and 55 of the *OSCR*).

L 3) Failure to keep records and file with the ERCB any other reports that may be required (Section 14 of the *OSCR*).

L 4) Failure to retain records at the place and by the person specified by the *OSCR* for a period of 18 months from the time the record is made or any other period specified by the ERCB (Section 17 of the *OSCR*).

L 5) Failure to keep at the plant site or other place of business a daily record of all oil sands, crude bitumen, or oil sand products (Section 55 of the *OSCR*).

24 Other

H 1) Failure to use the units and methods of measurement and standard conditions stipulated in Section 19 of the *OSCR* whenever the measurement of oil sands, crude bitumen, derivatives of crude bitumen, or oil sands products is required by the provision of an act, regulation, order, direction, term, or condition made by the ERCB, whether the provision deals with conservation, preservation, utilization, taxation, or royalties.

L 2) Failure to provide the ERCB or an authorized employee access at the plant site to piping and measurement drawings, operating procedures, and equipment specifications (Section 54(b) of the *OSCR*).

Appendix 2 Derivation of Authority

The requirements of *Directive 073* are based on specified sections of the following regulations and directives:

***Directive 073* section**	**Based on directive / regulation**	**Sections**	
Section 7 (a)	*Oil and Gas Conservation Regulations (OGCR)*	Sections 8.090(2)	Spacing
Section 7 (b)		Section 8.090(6)	Spacing
Section 8 (a)		Section 8.080	Flare system
Section 8 (b)		Section 8.090(7)	Flame arrestor
Section 10 (a)		Section 6.020	Signage
Section 10 (b)		Section 8.170	Fencing
Section 15 (a)		Section 8.150(4)	Housekeeping
Section 15 (b)		Section 8.050	Housekeeping
Section 16 (a)		Section 8.050	Spills
Section 18 (a)		Section 8.010	Pits
Section 20 (b)		Section 8.052	ERP spill exercise
Section 11 (a)(c)	*Directive 055: Storage Requirements for the Upstream Petroleum Industry*	All of *Directive 055* except for Sections 1.3, 1.4, 2.1, 3.4.1, 5.2, 11	Storage requirements
Section 11 (d)		Section 4	General storage requirements
Section 11 (e)		Section 6	Underground storage
Section 15 (c)		Section 5.3.2.1 (a)(4)	Housekeeping
Section 17 (a)	*Informational Letter (IL) 98-01: Memorandum of Understanding Between Alberta Environmental Protection and the Alberta Energy and Utilities Board Regarding Coordination of Release Notification Requirements and Subsequent Regulatory Response*		Notification of releases

Appendix 3 Field Inspection Access Policy to Oil Sands Mining and Processing Plant Operations in the Oil Sands Mining Area

The practices and procedures outlined in ERCB *Internal Guide 8: Occupational Health and Safety Manual* provide a guide to staff conducting on-site inspections. The practices and procedures are to be followed to eliminate or considerably reduce any associated risks encountered in the field.

The ERCB inspector's roles and responsibilities are in accordance with the Sections 8 and 9 of the *OSCA*, as well as with the *OSCR*. Prior to inspection, the ERCB inspectors will receive the appropriate orientation in health and safety rules specific to each oil sands mine and processing plant operations.

ERCB inspectors must be equipped with appropriate safety equipment for inspections (e.g., safety glasses, hard hat, coveralls), as well as area-specific equipment unique to individual operations. This is to be coordinated with the company being inspected as appropriate.

Appendix 4 Mining Inspection and Observation Sheet

ERCB Energy Resources Conservation Board

Mining Inspection and Observation Sheet

Facility Name _____ Location _____

Approval No. _____ Inspection Date _____

Further assessment by the ERCB required?	(Y/N)
1. Location and Geometry	
a) Is there an up-to-date as-built of the structure to confirm location and geometry?	___
b) Are the present elevations in accordance with the scheduled or design elevations?	___
c) Are there any adjacent operations or structures that could impact the subject structure?	___
2. Construction / Operation	
a) Is the construction taking place in accordance with accepted application and approval?	___
b) Is the construction taking place at the scheduled or normal operating rates?	___
c) Is any unscheduled loading or unloading of the structure taking place?	___
d) Have there been any recent upset conditions as a result of construction or operations?	___
e) Is there an Operation, Maintenance, and Surveillance (OMS) Manual for the structure?	___
f) Are up-to-date construction and maintenance records available for the structure?	___
3. Water Management	
a) Are the seepage control and collection elements operating in accordance with the design (modelled vs. measured)?	___
b) Are there any concerns about the operation of the seepage control elements (blocked pipes, sediment in ditches)?	___
c) Have any incidences of uncontrolled seepage been observed?	___
d) Are there any areas of ponding or standing water on the crest or at the downstream toe of the dike?	___
e) Have there been any freeboard reductions below design levels?	___
f) Is there any significant water-related erosion of the upstream or downstream slopes?	___
4. Geotechnical Stability	
a) Is the geotechnical performance of the structure satisfactory (within design expectations)?	___
b) Is there an adequate level of instrumentation monitoring for the structure?	___
c) Have there been any noticeable deformations in the fill or foundations?	___
e) Have there been any noticeable increases in piezometric levels within the fill or foundation?	___
f) Are there any noticeable features on the structure indicative of instability?	___
g) Have any abnormal features been observed (cracks, sinkholes, burrows, etc.)?	___
h) Are there any significant erosion gullies on the upstream or downstream slopes that could impact stability?	___
i) Are there or have there been any stabilization methods employed?	___
5. Resource Conservation and Sterilization	___
a) Is any mine oil sands pillar left behind, either in-pit or at the boundary?	___
b) Is any oil sands left on the pit floor?	___
c) Is any oil sands being sent to a waste storage area?	___
d) Is oil sands being used for other purposes, e.g., road construction?	___
e) Is oil sands being stockpiled?	___
f) Is oxidation of stockpiled oil sands evident?	___
g) Is any unapproved structure located on mineable oil sands?	___
h) Has any slope failure or collapse caused resource sterilization?	___

6. Comments:

Operator's Name and Signature _____ Operator's Phone Number _____

Inspector's Name and Signature _____ Deadline Date _____

Inspector's Phone Number _____ Inspector's Fax Number _____

Energy Resources Conservation Board, Fort McMurray Regional Office, 9915 Franklin Avenue, Fort McMurray, Alberta T9H 2K4

Appendix 5 General Requirements for Containment Devices[1] (Directive 055, Table 2)

Primary containment device/size[2]	*Directive 055*[3] section	Design and construction	Secondary containment	Leak detection	Weather protection
Aboveground tank (1-5 m^3)[4]	5.1	Supplier specifications. Nonleaking hoses, fittings, and nozzles. Spill control devices.	Not required.	Monthly visual inspection.	External weather-protective coating or made from a weather-resistant material.
Aboveground open-topped nonmetallic tanks (<30 m^3)	5.2	Supplier specifications.	Not required.	Monthly visual inspection. Integrity verified every 5 years.	Not applicable.
Single-walled aboveground tank (>5 m^3)[4]	5.3.1 5.3.2	Cathodic protection in corrosive environments. External coating for steel tanks and internal coating in corrosive environments. Spill control devices.	Graded containment area. Dike (or curbing for indoor tanks) capacity 110% of tank or 100% of largest tank plus 10% of aggregate volume if more than one tank. Impervious liner.	Monthly visual inspection. Sand over liner and leakage collection area.	External weather-protective coating or made from a weather-resistant material.
Double-walled aboveground tank (>5 m^3)[4]	5.3.1 5.3.3	Cathodic protection in corrosive environments. External coating for steel tanks and internal coating in corrosive environments. Spill control devices including overfill protection.	Double walls with interstitial space.	Monthly monitoring of interstitial space.	External weather-protective coating or made from a weather-resistant material.
Underground tank[4] (any size); includes tanks and sumps	6	Integrity testing of tank and piping prior to servicing. External coating and cathodic protection for steel tanks. Possible internal coating. Spill control devices.	Double walls with interstitial space.	Monthly monitoring of interstitial space.	Not applicable.
Container or group of containers (≤1 m^3 total)	7	Not applicable.	Not required.	Monthly visual inspection.	Not required.
Container or group of containers (>1 m^3 total)	7	Compatibility between container and stored materials. Segregated areas.	Dike, curb, and/or collection tray with a capacity of 100% of largest container or 10% of aggregate volume, whichever is greater.	Monthly visual inspection.	Physical cover (e.g., covered container or roof) or protective coating.
Lined earthen excavation	8	Specific to facility. Spill control devices.	Impervious liner.	Weeping tile. Monitoring well. Monthly monitoring.	Specific to facility and material type.
Bulk pad (solid material)	9	Specific to facility.	Impervious liner. Containment curb or dike.	Specific to material type.	Specific to facility and material type.

[1] Applies to all green field sites and to future expansions or new installations at existing facilities except grandfathered facilities listed in Appendix 6 of this directive. Applies to the permanent storage of produced water, crude oil, emulsions, condensates, chemicals, solvents, produced sand, lubricants other than for motor vehicle use, oilfield wastes, oily waste, and bitumen. Maximum storage duration should not exceed 2 years, except for oilfield wastes, which should not exceed 1 year. All inventory records must be kept for 2 years. All leak-detection monitoring results must be kept for 5 years.

[2] Internal volume.

[3] See *Directive 055* section cited for more detailed information.

[4] Tank requirements apply unless the fluids being stored are waters that meet the surface discharge criteria (chloride < 500 mg/litre maximum; pH 6.0 to 9.0; no visible hydrocarbon sheen; and no other chemical contamination) or are fluids that are infrequently stored in tanks and the tanks are emptied immediately.

Appendix 6 Approved Grandfathered Facilities[1]

Grandfathered projects	Approval	Note
Albian Sands Energy Inc.		
Muskeg River Mine Project	8512 A	
Muskeg River Mine Expansion Project	8512 B	
Canadian Natural Resources Limited		Including Amendment A to
Horizon Oil Sands Project	9752	Approval 9752
Imperial Oil Resources Ventures Limited		
Kearl Oil Sands Project	10829	
Fort Hills Oil Sands Project	9241	
Shell Canada Limited		
Jackpine Mine –Phase 1 Project	9756	
Suncor Energy Inc.	8535	Approval 8535 is grandfathered
Base Plant Project		up to Amendment E, which
Millennium Project		includes North Steepbank Mine
Steepbank Mine Project		Extension and Voyageur
North Steepbank Mine Extension Project		Upgrader Projects
Voyageur Upgrader Project		
Syncrude Canada Limited		
Mildred Lake Project	8573	
Aurora Project	10781	Approval 10781, Aurora South Project, is not grandfathered

[1] If date of production is delayed more than one year from the approved production date, the licensee must apply to the ERCB for approval for grandfathering.

Appendix 7 Notifications to the ERCB Required of Oil Sands Mining and Plant Operations[1]

Event	Notification time	Notification method	Information required
Spill			
Any spill of an unrefined product greater than 2 m^3 liquid or 30,000 m^3 vapour	• Quickest effective means. • When so directed by the ERCB, the operator must further report by letter within two weeks.	Phone the on-call ERCB personnel at 780-881-1283.	• Time event occurred • Description of circumstances leading to the event • Discussion of action taken in response to the event • Outline and schedule for spill-site or fire-site rehabilitation and repair of affected equipment • Any other material the ERCB may require • Contact person's name and telephone number
Fire			
Any fire that occurs requiring major fire fighting equipment and resources	• Quickest effective means. • When so directed by the ERCB, the operator must further report by letter within two weeks.	Phone the on-call ERCB personnel at 780-881-1283.	• Time event occurred • Description of circumstances leading to the event • Discussion of action taken in response to the event • Outline and schedule for spill-site or fire-site rehabilitation and repair of affected equipment • Any other material the ERCB may require • Contact person's name and telephone number
Other releases including odour emissions			
Any emissions off lease that have the potential to cause adverse off-site effect (including odour issues, flaring, diverting, and other releases that are not presently reported to the ERCB but are having or could have off-site impacts)	• Quickest effective means. • When so directed by the ERCB, the operator must further report by letter within two weeks.	Phone the on-call ERCB personnel at 780-881-1283.	• Time event occurred • Description of circumstances leading to the event • Discussion of action taken in response to the event • Outline and schedule for spill-site or fire-site rehabilitation and repair of affected equipment • Any other material the ERCB may require • Contact person's name and telephone number

[1] Appendix 7 does not affect any existing requirements to report to other regulatory agencies.

Appendix 8 Records Review of Operator

In preparation for any planned inspection, each inspector should become familiar with the facilities to be visited.

The first item to check is the ERCB Fort McMurray Regional Office Oil Sands Mining and Processing Plant Operation database. This will include information on when the facility was last inspected, any deficiencies found, and the compliance history of the operator.

As part of any planned facility inspection, each inspector should review the facility's S-23 reports, annual reports, performance reports, mine plans, and AENV annual water and air reports associated with the facility to become familiar with the current status and performance of the operations. The inspector should also determine whether an ERP is required for a sour products processing facility. While the Fort McMurray inspector is not responsible for an in-depth review of the reports, inspectors should be able to confirm that the activities at the facility are reflected on the S-23 report (e.g., that products and byproducts in inventory are not wasted), are as applied for in mine plans, and are in accordance with approval conditions.

Appendix 9 Tank Gauging Requirements

Tank gauging requirements, as stated in the *API Manual of Petroleum Measurement Standards*, Chapter 3: Tank Gauging, Section 3.1A: Standard Practice for the Manual Gauging of Petroleum and Petroleum Products (first edition, December 1994), are as follows:

> 3.1.A.9.1.1 Manual gauging must require three consecutive readings to be within a range of 3 millimeters (1/8 inch). If two of the three consecutive readings are identical, this reading must be reported to the nearest 1 millimeter if metric gauge tapes are used or to the nearest 1/8 inch if customary gauge tapes are used. If the gauger must use all three readings, the three readings should be averaged, and this average reported to the nearest 1 millimeter (for metric tapes) or 1/8 inch (for tapes with customary units). For crude oil lease tanks of 1000 barrel nominal capacity or less, the span will be increased to 5 millimeters (1/4 inch), and should be reported to the nearest 5 millimeters (or 1/4 inch).

To meet accuracy requirements for oil/condensate measurement, the tank must be sized as follows:

- Where uncertainty requirements are ± 0.5 per cent, the volume (V) in m^3 of the liquid being measured must be equal to or greater than the square of the tank diameter (d) in meters (m) times 0.92 (± 0.5 per cent uncertainty coefficient); $V \geq 0.92/d^2$.
- Where uncertainty requirements are ± 1.0 per cent, the volume (V) in m^3 of the liquid being measured must be equal to or greater than the square of the tank diameter (d) in meters (m) times 0.39 (± 1.0 per cent uncertainty coefficient); $V \geq 0.39/d^2$.